

Measurement of Atmospheric Muon Neutrino Disappearance using CNN Reconstructions with IceCube

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The IceCube Neutrino Observatory is a Cherenkov detector deployed over a cubic kilometer deep within the South Pole ice. The DeepCore subdetector is built in the lower center of the array and more densely configured, improving the reconstruction performance of neutrinos at the GeV-scale, where atmospheric neutrino oscillations can be studied. Convolutional neural networks (CNN) are used to reconstruct neutrino interactions in and near the DeepCore detector, which achieve comparable direction and energy resolution to current Likelihood-based methods but with 3 orders of magnitude faster execution speeds. In this talk, I will present an ongoing study of atmospheric muon neutrino disappearance, which is established on the new reconstructions using CNNs, and compare it to the recent IceCube results.

Attendance type

In-person presentation

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